

Ethnopsychopharmacology African American Adults

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Pharmacogenetics

- The study of the genetic variations affecting individual response to drugs to inform development of safer prescribing criteria and more effective drugs.

Ethnopsychopharmacology

- The study of the way racial and ethnic groups respond to psychiatric medications

Ethnopsychopharmacology

- Numerous mechanisms affect drug responses
 - ◆ Conjugation (P450 enzymes)
 - ◆ Volume of Distribution
 - ◆ Protein Binding
 - ◆ Other Pharmacokinetic Factors (Theoretical)
 - ★ Absorption
 - ★ Excretion
 - ★ Crossing Blood Brain Barrier

Figure 1

Factors determining pharmacological response

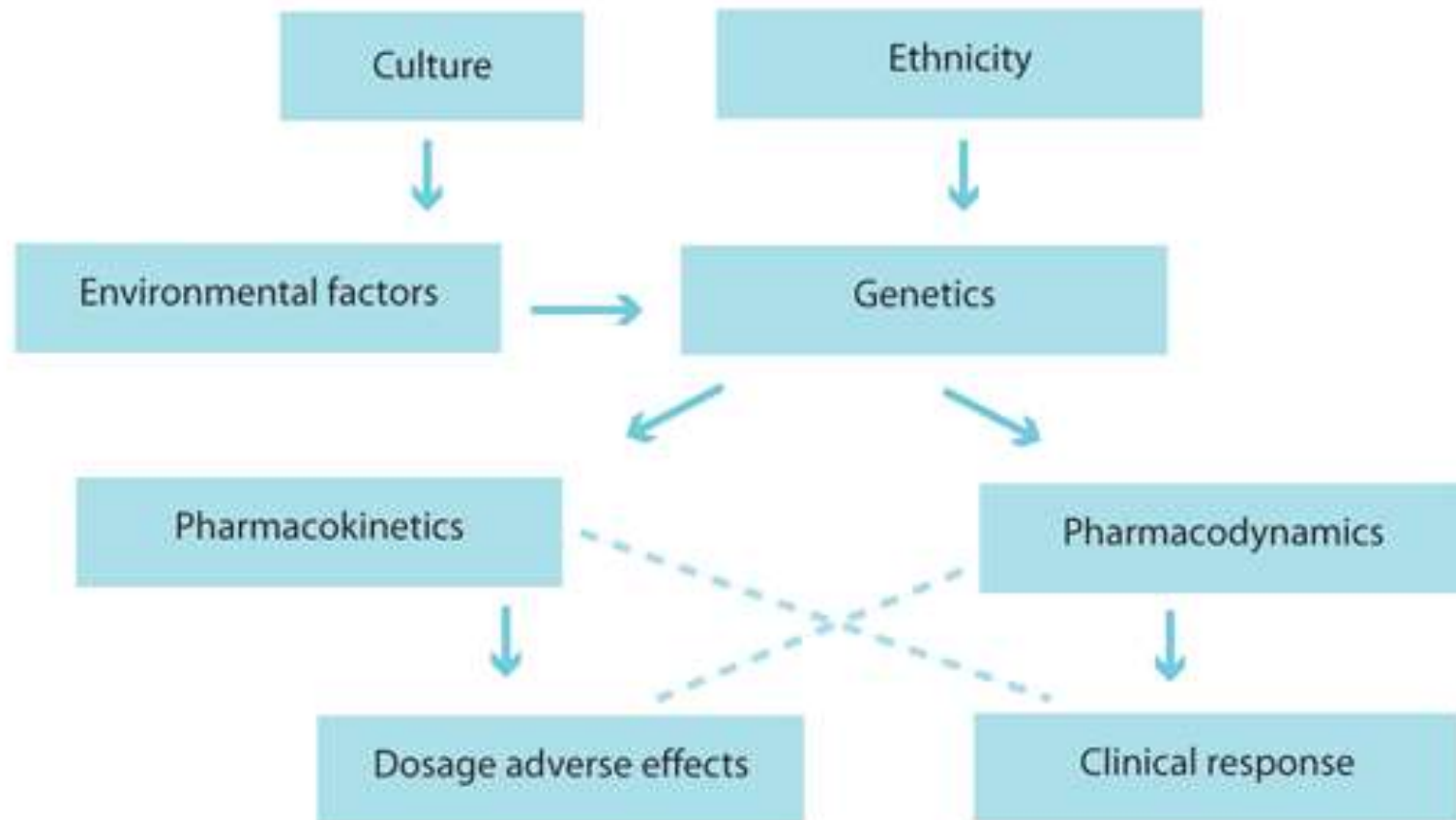
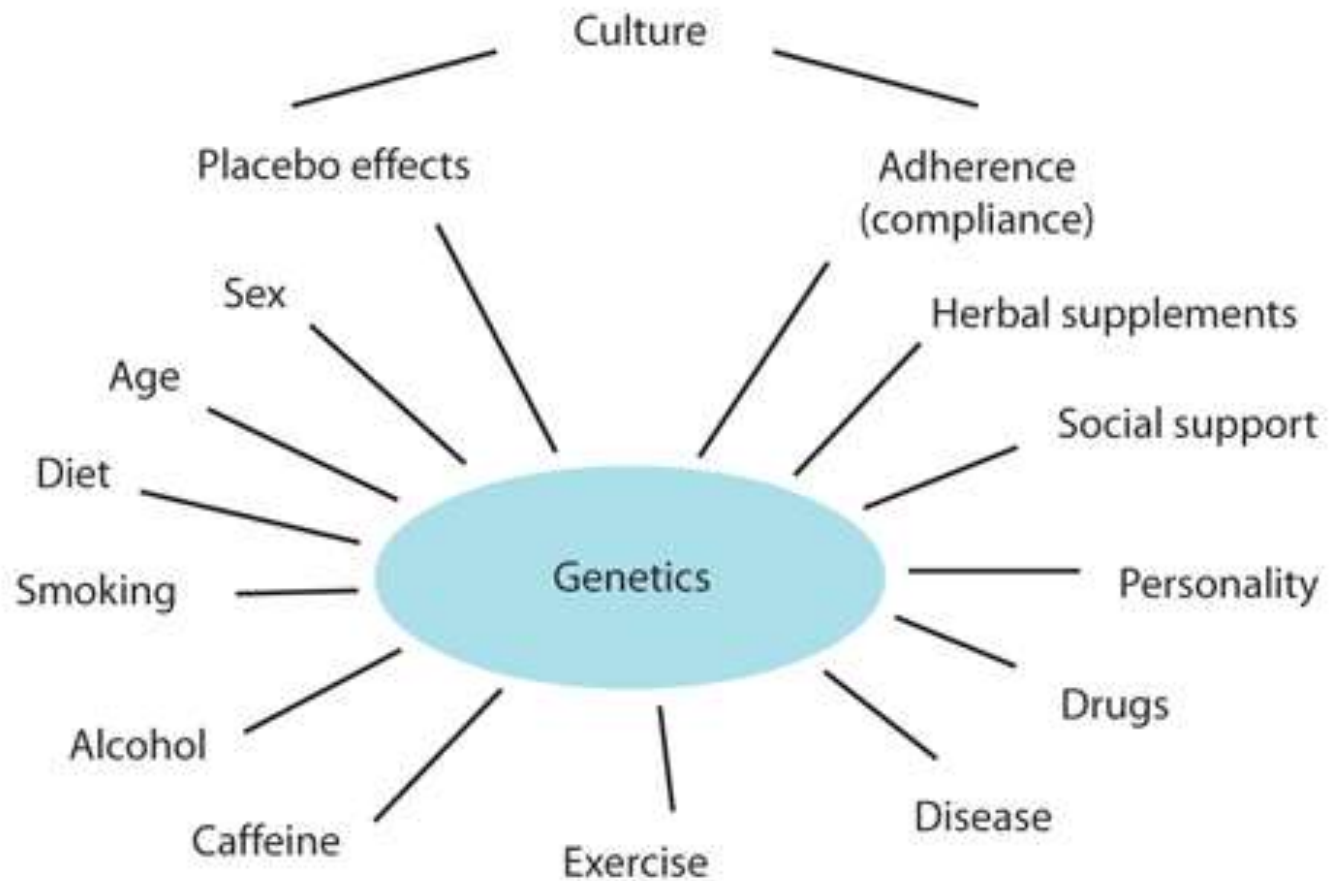


Figure 2

Factors affecting drug response



Background Info

FDA recognizes that racial and ethnic groups may respond differently to medications.

Requires that study participants be permitted to self-report ethnicity

Many studies indicate there are difference in treatment outcomes between different racial/ethnic groups.

Cultural Considerations

- Black patients significantly more likely to have poor medication adherence

Tricyclic antidepressants

- Some studies have suggested that African American patients may respond better and more rapidly to TCAs than to other antidepressants

— Silver, Poland, Lin 1993

- Greater side effects to TCAs in African Americans may be the result of slower metabolism (eg Desipramine)

— Lin and colleagues (unpublished)

Cultural Considerations

- SSRIs

- African American patients may respond less robustly to Fluoxetine when compared with whites
 - Silver, Poland, Lin 1993
- SSRIs often inhibit P450 isoenzymes resulting in drug-drug interactions

Consequences of Metabolic Syndrome

- Abdominal obesity
- Abnormal glucose metabolism
- Elevated lipids
- Cholesterol metabolism impaired
- Elevated BP
- Increased risk of CV Disease and DM II

Cultural Considerations - Clozapine

- Benign (ethnic) leukopenia not uncommon in younger African American males
- May have implications for clinical monitoring systems
- Defined as $1.5 \times 10^9/L$

Cultural Considerations

- 33% of African American patients may be slow metabolizers of antipsychotic medication
 - ★ -Lin 2010
- African American patients are more likely to receive injections of antipsychotics
- Overmedication is more common
 - -Segel et al 1996

Intra Ethnic Specifics

- African Americans and sub-Saharan Africans – more likely to be slow metabolizers (CYP2D6*17)
- Ethiopians – more likely to be ultra-rapid metabolizers (29%)

Dietary Considerations

- Sudanese people and South Indians metabolize antipyrine and clomipramine slower than others while they reside in their native countries, but after they adapt a Western diet, their metabolism speeds up.
- This phenomenon is also thought to affect alprazolam, adinazolam and clomipramine across populations.

Red Blood Cell (RBC)/Serum Li Ratio

- Distribution of Lithium across cellular membranes is controlled by several membrane transport and counter transport mechanisms
- Sodium-Li countertransport system plays a pivotal role
- This system is significantly less active in African Americans than in Caucasians

Red Blood Cell (RBC)/Serum Li Ratio

- The difference between African Americans and other ethnic groups may result in a higher rate of CNS-related side effects
- Lower Lithium levels may prevent central toxicity

Cultural Considerations

- Benzodiazepines

- Adinazolam – triazolobenzodiazepine, investigational agent
- Clearance increased in African American patients resulting in higher concentrations of N-desmethyladinazolam, a metabolite of Adinazolam, and greater drug effects on psychomotor performance

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Other IMPORTANT Considerations

- Culture and symbolic aspects of psychopharmacology are relatively unstudied
 - ◆ Patient biases
 - ◆ Patient beliefs
 - ◆ 'Placebo Effect'

Baker and Bell Psych Svs March
1999

Personalized Medicine

- **Pharmacogenomic tests** can provide clinicians a means to practice personalized psychopharmacology
- **Ancestry DNA tests** can identify what percentage of an individual's DNA is from different parts of the world
- Both may have treatment implications for patients

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